

IN THE SPECIFICATION:

Please substitute paragraph [0002] for the following starting at page 1, line 15 and ending at line 20.

[0002] An ink jet (IJ) recording method is widely used because of advantageous features, i.e., a high speed, high image quality, and a low running cost. Recently, with the development of information infrastructures such as computer hardware/software and networks, a higher speed and higher image quality have been demanded.

Please substitute paragraph [0004] for the following starting at page 2, line 3 and ending at line 7.

[0004] (1) For a plurality of discharge ports of the recording head, if there is a variation in the discharge direction of ink droplets for each of the discharge ports, the positions of dots formed on the recording paper are offset and, hence, streaks appear in a recorded image.

Please substitute paragraph [0005] for the following starting at page 2, line 8 and ending at line 11.

[0005] (2) If there is a variation in the amount of discharged ink for each of the discharge ports, the sizes and densities of dots formed on the recording paper are varied and, hence, density unevenness appears in a recorded image.

Please substitute paragraph [0006] for the following starting at page 2, line 12 and ending at line 21.

[0006] (3) If there are variations in the direction and the amount of ink discharged through one discharge port, the positions, sizes, and densities of dots formed in the main scanning direction on the recording paper are varied[[,]]; thus, ~~resulting in that~~ a line in the main scanning direction may ~~be not~~ not be uniform, or a recorded image may ~~provide~~ have a rough feel when ~~looked at~~ viewed. This problem is ~~apt~~ more likely to occur ~~with~~ when using a bubble jet method, in which ink is discharged by utilizing thermal energy, ~~particularly, among~~ instead of the other various discharge methods used in ink jet recording techniques.

Please substitute paragraph [0008] for the following starting at page 3, line 3 and ending at line 25.

[0008] Also, as a method for eliminating density unevenness ~~in a~~ through software way, Japanese Patent Laid-Open No. 57-41965, Japanese Patent Publication No. 2708439, Japanese Patent Publication No. 2711011, etc. disclose a process of changing the number of driven ink droplets so as to cancel variations in the amount of discharged ink among the discharge ports. The inventions disclosed in those related publications are concerned with the technique ~~for~~ of recording a test pattern by using a recording head beforehand, reading the density of the recorded test pattern, and correcting the density unevenness. For example, information regarding characteristics, such as the ink discharge amount of the recording head, is obtained based on variations in the read density unevenness, and the obtained information is utilized in image processing executed when an image is actually recorded. The number of driven ink droplets, the amount of discharged ink, etc. are thereby adjusted so as to suppress the occurrence of streaks and density unevenness. The disclosed method is to execute a correction process by utilizing information of the density unevenness that is obtained from the result of

recording the test pattern beforehand, and it is confirmed as being an effective manner for reducing the density unevenness.

Please substitute paragraph [0016] for the following starting at page 7, line 14 and ending at line 20.

[0016] While the method disclosed in the above-cited Japanese Patent Laid-Open Nos. 60-107975 and 3-231861 performs binary recording, the method disclosed in USP 5,430,479 performs multi-value recording. The latter method is ~~featured~~ superior in that, even when recording a particular half-tone image, streaks and density unevenness are less apt to occur.

Please substitute paragraph [0019] for the following starting at page 8, line 7 and ending at line 18.

[0019] A method for solving the above-mentioned problems is disclosed in USP 6,547,361. This method comprises the steps of reading a recorded image, comparing the read recorded image with the image information to be recorded used to record it, determining positions of recording failures, and recoding again the same image while correcting the recording failures in a subsequent scan. As a result, streaks and density unevenness can reliably be reduced for any image. Further, even when the direction and the amount of ink discharged through one discharge port vary for each of the discharge ports, it is possible to reliably reduce streaks and density unevenness.

Please substitute paragraph [0020] for the following starting at page 8, line 19 and ending at page 9, line 1.

[0020] Regarding USP 6,547,361, ~~it is to be noted that~~ this patent discloses the method for locating the positions of recording failures and performing correction recording in a subsequent scan, but ~~this patent~~ does not sufficiently disclose the process for of creating correction data ~~which~~ that is effective to satisfactorily reduce streaks and density unevenness in addition ~~to correction of~~ correcting the recording failures.

Please substitute paragraph [0022] for the following starting at page 9, line 11 and ending at line 19.

[0022] The present invention ~~is featured in~~ has the feature that, by reading a density of an image, not yet completed, in a preceding scan of recording and reflecting the result of the reading ~~on~~ in a subsequent scan of recording, streaks and density unevenness that occurred in the preceding scan of recording are reduced in the subsequent scan of recording. More specifically, based on the result of the reading, recording data for use in the subsequent scan of recording ~~is~~ are corrected so as to reduce streaks and density unevenness.

Please substitute paragraph [0023] for the following starting at page 9, line 20 and ending at page 10, line 6.

[0023] To achieve the above object, the present invention provides a recording method for use in a recording system for completing an image by multiple scans of a recording head, the method comprising the steps of reading an image recorded by a predetermined number of scans among the multiple scans of the recording head except at least the last scan; correcting, based on a result of reading the image in the reading step, data for an image to be recorded by one ~~one~~ or more scans subsequent to the predetermined number of scans;

and correctively recording an image by performing one ~~one~~ or more scans subsequent to the predetermined number of scans in accordance with the corrected data.

Please substitute paragraph [0024] for the following starting at page 10, line 7 and ending at line 19.

[0024] Also, the present invention provides a recording apparatus for scanning a recording head relative to a recording medium to record an image, the apparatus comprising a recording control unit for scanning the recording head multiple times relative to the recording medium to complete the image; a reading unit for reading an image recorded on the recording medium; and a correcting unit for reading an image recorded by a predetermined number of scans among the multiple relative scans of the recording head except at least the last scan by the reading unit and correcting, based on a result of reading the image, data for an image to be recorded by one ~~one~~ or more scans subsequent to the predetermined number of scans.

Please substitute paragraph [0040] for the following starting at page 13, line 21 and ending at page 14, line 5.

[0040] A sheet of paper 106, as a print medium, is ~~let~~ fed into the ink jet printer through an insertion port 111 provided at a front end of the printer. Finally, the paper 106 is advanced by a feed roller 109 to a position under a region in which the carriage 101 moves, after its feed direction has been reversed. The carriage 101 is moved across the paper 106. During the movement of the carriage 101, the inks are discharged from the ~~had~~ head mounted on the carriage 101, whereby a print (image) is recorded in a print area on the paper 106 supported on a platen 108.

Please substitute paragraph [0049] for the following starting at page 17, line 1 and ending at line 20.

[0049] First, in a first scan, only the discharge ports N13 to N16 are employed and ink droplets are discharged through those discharge ports which are allocated in accordance with the input image data. The term "image data" means information representing in ~~which positions on recording paper~~ the position and level of density that dots are to be recorded ~~at what a level of density on the recording paper~~. A manner of determining from the image data whether the ink droplets are to be discharged in the current scan, i.e., a binary coding process, can be implemented by any ~~suitable~~ one of the suitable known methods, such as simple binary coding, dithering, a method using a mask, ~~and or~~ error dispersion method. The input image data (i.e., original data before being subjected to ~~the~~ binary-coding) is stored in a memory. Whether the ink is to be discharged from each discharge port of the recording head is controlled in accordance with the binary-coded data and recording dots are formed on the paper. With this first scan, because only the discharge ports N13 to N16 are used for recording, the recording is made on an area, denoted by 6a, of the paper corresponding to the array width of those discharge ports.

Please substitute paragraph [0052] for the following starting at page 19, line 2 and ending at line 9.

[0052] Then, the read image is subtracted from the input image data stored in the memory. Prior to the subtraction, if necessary, the read image data is subjected to scaling for tone range adjustment. More specifically, when the input image data is data in the tone range of

0 to 255 (256 levels of gradation) and the reading is performed in the tone range of 0 to 127 (128 levels of gradation), the read image data is doubled ~~for matching of~~ to match the tone range.

Please substitute paragraph [0053] for the following starting at page 19, line 10 and ending at line 14.

[0053] Then, the data resulting from the subtraction is subjected to binary coding. The binary coding can be implemented by any ~~suitable~~ one of suitable known methods, such as simple binary coding, dithering, a method using a mask, and an error dispersion method.

Please substitute paragraph [0073] for the following starting at page 27, line 19 and ending at page 28, line 3.

[0073] The feed direction 7a of the recording paper is defined as directing from above to below on the drawing sheet (it is here assumed that the feed direction is the main scanning direction). The recording is first made by the first multi-head (701 to 704). Then, the image recorded by the first multi-head is read by the optical reading device ~~205~~ 705, and the result of the reading is subtracted from the input image data. Prior to the subtraction, if necessary, the read image data is subjected to scaling for tone range adjustment.

Please substitute paragraph [0076] for the following starting at page 28, line 10 and ending at line 24.

[0076] In this fourth embodiment, allocation of the image data to the first multi-head (701 to 704) on the upstream side and the second multi-head (706 to 709) on the downstream side is not limited to a fifty-to-fifty ratio. For example, the image data may

allocated at a larger ratio to the first multi-head on the upstream side and at a smaller ratio to the second multi-head on the downstream side. In such a case, the second multi-head serves mainly to perform the recording to reduce streaks and density unevenness in the image recorded by the first multi-head. Stated another way, because the recording based on the image data is performed by the second multi-head at a smaller ratio, it is possible to suppress streaks and density unevenness caused by recording characteristics of the ~~second~~ first multi-head.